CALIFORNIA
High-Speed Rail

WE HEAR YOU

SOUND IS A KEY CONCERN FOR THOSE WHO LIVE OR WORK NEAR A TRAIN.

- The Federal Railroad Administration has developed rigorous procedures to measure potential noise impacts.
- These procedures will guide the California High-Speed Rail Authority as it designs its system to address noise concerns.

HIGH-SPEED TRAINS CREATE FOUR KINDS OF SOUND:

- Rolling – sound from the wheels as trains move along the tracks.
- Propulsion – sound from motors and gears that make the train move.
- Equipment – sound from cooling fans and air conditioners.
- Aerodynamic – sound from the flow of air moving past the train at high speed.

COUNTERACTING SOUND IS A KEY PART OF THE ENVIRONMENTAL REVIEW PROCESS.

- The Authority is conducting a detailed environmental review of alternatives for building each segment of the project statewide.
- Once formal draft environmental impact reports are issued, the Authority will work with the public and local, state and federal agencies to consider feasible mitigation of significant sound impacts.

THE REVIEW WILL CONSIDER WHAT PEOPLE WILL HEAR AND WHEN THEY'LL HEAR IT.

- The Authority will look at the use of properties nearby (such as homes, schools, churches and libraries, etc.) and examine how a wide variety of factors, like the distance from the tracks, other sources of sound, and the presence of buildings will impact people nearby.

THE REVIEW WILL LOOK AT TWO KEY MEASUREMENTS:

- Hourly Equivalent Sound Level, which measures the moment-to-moment fluctuations in sound over a single hour – taking into account both the number of trains and the time they take to pass by – the best measure for assessing the impacts on offices, schools and libraries.
- Day-Night Sound Level, looks at sound fluctuations over a full 24 hours, taking into account the heightened sensitivity in residential areas to sounds made late at night.

Key moves to reduce sound impacts:

- In major urban areas (Bay Area, Los Angeles and San Diego) high-speed trains will mostly run at **125 mph or less**
- High-speed trains will not have scheduled passenger service between midnight and 5 a.m.
- Grade-separated system will **eliminate the need for blaring horns**

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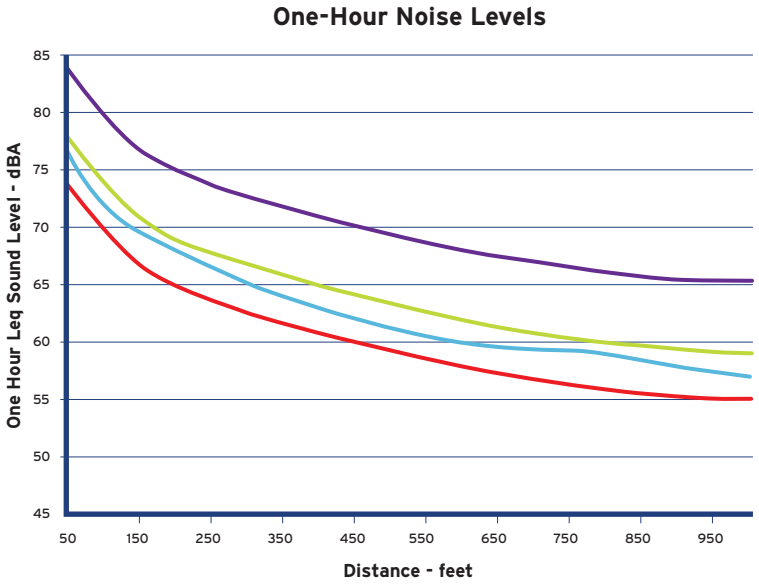
HERE'S WHAT YOU CAN EXPECT:

FOR OFFICES, SCHOOLS AND LIBRARIES:

- In urban and highly developed suburban areas, a high-speed train traveling 125 mph will produce an hourly equivalent sound level of about 73 decibels from a distance of 100 feet – less than a commuter train with a blowing horn.

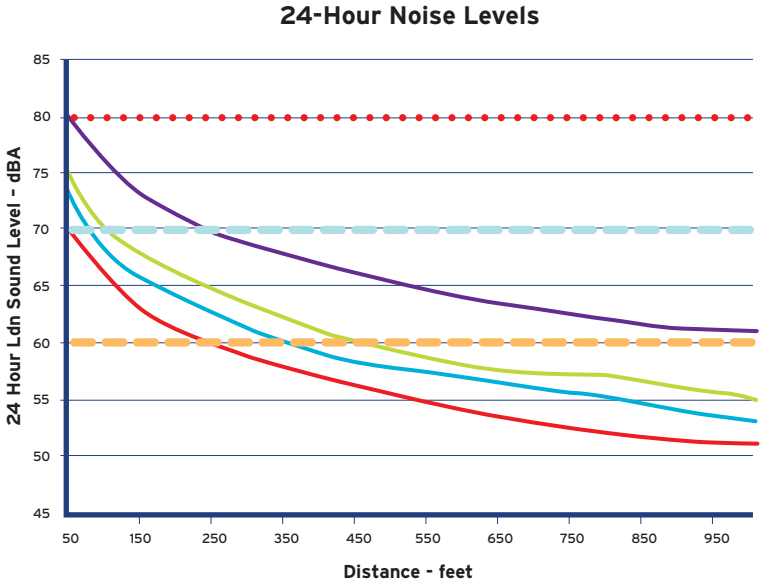
220 mph
125 mph
160 mph
90 mph



FOR RESIDENTIAL NEIGHBORHOODS:

- In downtown city settings, high-speed trains – even at top speed – will be **within the existing noise levels** from traffic and other sources.
- In noisy urban residential areas, high-speed trains – even at top speed – will be **within existing noise levels** for everyone except listeners within 250 feet of the tracks.
- In quiet residential areas, high-speed trains – depending upon speed – **could affect noise levels for listeners within 1,000 feet of the tracks.**

Downtown City Background Ldn
"Very Noisy" Urban Residential Area Ldn
"Quiet" Urban Residential Area Ldn
220 mph
125 mph
160 mph
90 mph



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Learn More!

The California High-Speed Rail Authority has issued a detailed fact sheet aimed at informing communities and residents statewide about sound. It is posted on our website so people can participate in the project planning process.

Speak up!

Your feedback will help make sure California's high-speed train project becomes a good neighbor to the communities it serves.

KEEP IN MIND:

HIGH-SPEED TRAINS WON'T KEEP YOU UP AT NIGHT.

- Unlike freight rail trains, which often run late at night, the high-speed train will not have scheduled passenger service between midnight and 5 a.m.

HIGH-SPEED TRAINS ARE GENERALLY QUIETER THAN CONVENTIONAL TRAINS.

- Because high-speed trains are electrically powered, there's no noisy diesel engine. A high-speed train has to travel about 150 mph before it makes as much sound as a commuter train at 79 mph.
- And because California's high-speed trains will be grade-separated (they'll go over or under streets and roads) there's no need for noisy bells or horns.

FAST TRAINS MAKE FOR SHORTER SOUNDS.

- A high-speed train moving at 220 miles per hour will only be heard for about **four seconds**.
- A freight train traveling at 30 miles per hour can be heard for **60 seconds**.

NEWER TRAIN DESIGNS ARE GETTING QUIETER.

- While the federal guidelines are based on trains in use in 1995, newer trains often make substantially less noise.
- While the Authority is using the federal guidelines for planning purposes, the trains we ultimately put in service will likely be much quieter.

ENGINEERING, DESIGN AND MITIGATION MAKE A BIG DIFFERENCE.

- Sound engineers and train builders have more than 40 years of experience measuring, evaluating and addressing the noise impacts from high-speed trains – and good mitigation measures are working around the world.
- For a train traveling less than 160 mph, a six to 12-foot sound barrier will **reduce noise by 5 to 9 decibels** (the human ear perceives a 10-decibel reduction as cutting the sound in half)
- A train traveling on an aerial structure would produce **1 to 2 additional decibels** of sound.
- A train traveling in an open trench would produce **5 to 7 decibels** less sound than one at ground level.

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